HELPING TO CONTROL FLOODS AT THEIR SOURCE - V

A radio discussion among F. A. Silcox, Chief of Forest Service, Hugh H. Bennett, Chief of Soil Conservation Service, and Milton S. Eisenhower, Director of Information, broadcast Friday, March 12, 1937, in the Department of Agriculture period, National Farm and Home Hour, by 70 stations associated with the National Broadcasting Company.

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SALISBURY:

A month has passed since the great floods rolled down the Ohio and Mississippi Rivers. The high waters have receded and the rivers are back to normal again. But many people are at work planning ways and means of lessening the chances of such disasters occurring again. So, today we bring you the fifth of a series of discussions on the part that proper land use and upstream engineering may play in flood prevention and control. Again we present Mr. Bennett, Chief of the Soil Conservation Service, Mr. Silcox, Chief of the Forest Service, and Mr. Eisenhower, Director of Information. All right, Milton. . . .

EISENHOWER:

Thank you, Morse -- and hello, everyone. Our discussion today is going to deal with reservoir sedimentation and the silting of stream channels. You may recall that in our first discussion a few weeks ago we told you that proper land use and upstream engineering can make five important contributions to flood control. Two of these five contributions dealt with silting and sedimentation, so this seems like a good time to refer back and refresh our memories. We'll ask Mr. Silcox to tell us once again just what these contributions are?

SILCOX:

Very well, Milton. We said that proper land use and upstream engineering on the watersheds would:

First, save the soil for productive use.

Second, do away with periodical minor floods.

Third, reduce the crests of major floods.

Fourth, greatly reduce the sedimentation of reservoirs, and

Fifth, minimize the silting of stream channels.

EISENHOWER:

Now let's explain just what we mean by silting and sedimentation. To be quite frank, I've never been able to find very much difference between the two. Perhaps Mr. Bennett can set me straight.

BENNETT:

Well, Milton, unless you want to go into technicalities, there isn't much difference. In the popular sense, silting and sedimentation are just about synonymous.

EISENHOWER:

Then why confuse everyone by using two words?

BENNETT:

For technical reasons -- to avoid confusing scientists. To the geologist sedimentation describes the process of depositing the various materials, all of them, that come to rest in stream channels, on bottom lands, and in reservoirs. This includes loam, sand, gravel, clay, rock, logs, and everything. But the geologist thinks of silting in terms of soil material alone.

SILCOX:

That's right, Hugh, but silting has been loosely used. To many engineers and to the public generally, I think silting has come to mean everything that is deposited in channels and reservoirs.

EISENHOWER:

Well, let's use that term today. No matter whether you call it silting or sedimentation, the process causes a lot of damage.

SILCOX:

There can't be any argument about that, Milton. Silting of itself usually harms property values. Also it helps cause floods that do further damage.

BENNETT:

And the more silting that goes on the more likely we are to have floods.

EISENHOWER:

Let's take one thing at a time. Sil, you say that silting is one of the principal contributing causes of floods. Suppose you tell us more about that.

SILCOX:

Silting is largely the result of erosion. When the sloping lands in a watershed are not protected erosion proceeds pell-mell. Every time a heavy rain falls on unprotected sloping land the water runs off into the nearest stream and carried with it a load of soil.

BENNETT:

That soil isn't always good soil either. After erosion has been going on for a time, the topsoil is washed away. Then the run-off waters carry unproductive clay material -- the subsoil -- into the streams.

SILCOX:

And no matter whether good soil or poor soil goes into the streams, sooner or later much of it comes to rest on the bottom of the stream channel. The result is the stream isn't as deep as it was before.

EISENHOWER:

That means the channel can't carry as much water as it did before.

SILCOX:

Not nearly so much. So the volume of water that the stream would carry at one time now will either cut a new channel or overflow the original banks and widen the old channel. Or, if the stream has levees, it means that those levees must be raised higher and higher to confine the same amount of water to the channel.

For an example of what silting does, you should see the tributaries of the Yazoo River in Mississippi. Erosion on the watersheds washed so much sand and gravel into the stream channels that the streams no longer flow in their old beds. They've cut new channels in what used to be farming land, and some of the new channels are several feet above the level of the original stream beds.

BENNETT:

Silting is bad, but it isn't the only harmful result of erosion. Not all of the silt settles in the stream channels. Flood waters drop a lot of sand and gravel on good, productive bottom lands. Of course, if it were all rich topsoil that washed from the uplands to the lowlands, the land owners that lost the soil would be the only ones hurt. But usually flood deposits are a mixture of all sorts of debris. The result is that farmers on both uplands and lowlands take a loss. There is no gain to anyone.

The public generally loses in still another way. Some of the eroded material is carried along by the water until the waters come to a dam. Then a lot of sediment falls to the bottom of the reservoir. Gradually the capacity of the reservoir to hold water is reduced. It doesn't make any difference whether it's a power reservoir, water supply reservoir, irrigation reservoir, or a flood control reservoir. That's why the engineers who build the big dams downstream are so interested in proper land use and erosion control over entire watersheds -- over the fields, pastures, and woodlands -- the whole area that drains into the main stream. It protects the big dams in the big rivers and makes them last a lot longer.

EISENHOWER:

That's very important, Hugh. It was one of the things Congress had in mind when it passed the Omnibus Flood Control Act of 1936.

SILCOX:

Very definitely. One reason why the Congress specified close co-operation between the downstream engineers and the men who are interested in putting land to its best use was that correct land use in the watersheds is insurance for the engineering works downstream.

EISENHOWER:

That's a graphic way of putting it. Let's take the analogy a little further. Hugh, the Soil Conservation Service has been studying reservoir silting all over the country. Suppose you tell us some of the acturial data on the life expectancy of reservoirs in territory where erosion and sedimentation are going on pretty fast.

BENNETT:

We haven't found a very happy situation, Milton. Out of 350 reservoirs we've studied during the past few years in relation to soil erosion and silting, by far the large majority of them have been filling up very fast. In 1934, for example, we examined 56 reservoirs in the southern Piedmont. Thirteen of the major reservoirs in this group, ranging up to 50 feet high, were completely filled by eroded material within an average period of less than 30 years.

The reservoir behind Austin Dam, at Austin, Texas, was nearly filled in five years, and was completely filled in 15. And although it may be hard to believe, the Harding Reservoir near Santa Ana, California, was almost filled during a single month of heavy rains following a fire in the drainage basin.

In this connection, we should not forget that once a large reservoir has been permitted to fill up, no practical method has been found for cleaning it out. When it's filled, it's done for.

SILCOX:

I think we should point out that before fire destroyed the cover on the land, the reservoir had silted very little.

BENNETT:

That's right, Sil. Wherever the land is put to its right use and protected against erosion, there is usually very little silting. At the Santiago Creek Reservoir, which is only six miles downstream from the Harding Reservoir I just told you about, fires have been few, the land is well protected, and the rate of silting has been very low.

EISENHOWER:

There's another aspect of reservoir silting we haven't touched on today. When a reservoir is filled up with sand, gravel and other erosion debris, the best location for the reservoir has been destroyed. The engineers naturally pick out the best available location for each dam they build. If and when the reservoir fills up with silt they must use a less desirable location for the next dam.

SILCOX:

I'd like to add some more comments about the destruction of individual and public property by erosion and silting but I don't think there's time.

SALISBURY:

Not today, sorry to say.

Farm and Home listeners, you have heard another discussion on the watershed and upstream phases of flood control by Mr. F. A. Silcox, Chief of the Forest Service; H. H. Bennett, Chief of the Soil Conservation Service; and M. S. Eisenhower, Director of Information. This was the fifth of their reports on what the Department of Agriculture in cooperation with the War Department plans to do to carry on its duties of planning, under the Omnibus Flood Control Act, for flood control on 222 watersheds in the United States.

This is the first explanation that has been given of the plans to effectuate flood control through better use of the farm and forest land on the watersheds. Anyone who wishes copies of the 5 discussions may get them by sending a request to the U. S. Department of Agriculture, Washington, D. C. Ask for the 5 radio discussions on land use in flood control.

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